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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/642,292	08/18/2003	Shinichi Aya	Q76987	2004

23373 7590 12/22/2005
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EXAMINER

RIELLEY, ELIZABETH A

ART UNIT	PAPER NUMBER
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2879

DATE MAILED: 12/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/642,292	AYA ET AL.	
	Examiner	Art Unit	
	Elizabeth A. Rielley	2879	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 October 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

Amendment filed 10/14/05 has been entered and considered by the Examiner. Claims 10 and 11 are added. Currently, claims 1-11 are pending in the instant application.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Harushige (JP 08-236023) in view of Sakamoto (US 4103416).

In regard to claim 10, Harushige ('023) teaches a glass tube (1; paragraph 2), a glass bead (6; paragraphs 14-16) for sealing an end of said glass tube (paragraph 14), and an electrode lead (2b; paragraph 14) to be fixed to said glass bead (6). Harushige ('023) is silent regarding the limitation of the electrode having an oxidized portion only at a predetermined adhesion area where the electrode lead is fixed to the glass bead. Sakamoto ('416) teaches a method of manufacturing a discharge tube that oxidizes (28; figure 3) only a predetermined area (that of 28) of an electrode lead (20; figure 3) that is used for adhering a glass bead (30; column 5 lines 7-24) in order to improve electrical connections (column 3 lines 1-16). Hence, it would have been obvious at the time of the invention to one of ordinary skill in the art to combine the discharge tube of Harushige with the oxidizing only the adhesion area, as taught by Sakamoto ('416). Motivation would be to improve the electrical connection of the device.

Claims 1 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harushige (JP 08-236023) in view of Nakamura et al (US 6000982) and Sakamoto (US 4103416).

Harushige ('023) teaches a method for manufacturing a discharge tube having a glass tube (1; paragraph 2), a glass bead (6; paragraphs 14-16) for sealing an end of said glass tube (paragraph 14), and an electrode lead (2b; paragraph 14) to be fixed to said glass bead (6), said method comprising the steps of: applying heat by use of a heat application device to oxidize a surface of a predetermined adhesion area of said electrode lead (paragraph 14); and fixing said glass bead to said adhesion area of said electrode lead (paragraphs 14-15). Harushige ('023) is silent regarding the limitations that a rare gas is put into the glass tube, and the heat application device oxidizes only a surface of a predetermined adhesion area. Nakamura et al ('982) teaches the use of a rare gas into a discharge tube (column 1 lines 29-36) in order to increase the life to the discharge tube. Hence, it would have been obvious at the time of the invention to one of ordinary skill in the art to combine the discharge tube made from the method of manufacturing of Harushige ('023) with the rare gas of Nakamura et al ('982). Motivation would be to increase the life of the discharge tube. Both Nakamura et al and Harushige are silent regarding the limitation that the heat application device oxidizes only a surface of a predetermined adhesion area. Sakamoto ('416) teaches a method of manufacturing a discharge tube that oxidizes (28; figure 3) only a predetermined area (that of 28) of an electrode lead (20; figure 3) that is used for adhering a glass bead (30; column 5 lines 7-24) in order to improve electrical connections (column 3 lines 1-16). Hence, it would have been obvious at the time of the invention to one of ordinary skill in the art to include in the method of manufacturing a discharge tube step of oxidizing, as taught by Harushige/Nakamura, oxidizing only the adhesion area, as taught by Sakamoto ('416). Motivation would be to improve the electrical connection of the device.

Claims 2-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harushige (JP 08-236023) in view of Nakamura et al (US 6000982) and Sakamoto (US 4103416) as applied to claim 1 above, and further in view of Kudo et al (US 6531811).

Harushige/Nakamura/Sakamoto teach all the limitations set forth, as described above, except the heat application device comprising a pair of electrode members and a power source that applies a predetermined voltage between said pair of electrode members to heat said adhesion area; a portion of said electrode member to contact said electrode lead is made of a conductive material; and a degree of oxidation of said adhesion area is adjusted by changing the voltage, the electric current, the energizing period of said power source, or a combination thereof. Kudo et al ('811) teaches a heat application device comprising a pair of electrode members (4; figure 1; column 1 lines 25-40) and a power source (figure 4) that applies a predetermined voltage (figure 4) between said pair of electrode members to heat said adhesion area (column 7 lines 27-33); a portion of said electrode member (4) to contact said electrode lead (1) is made of a conductive material (column 1 lines 25-39); and a degree of heating said area is adjusted by changing the voltage, the electric current, the energizing period of said power source, or a combination thereof (column 7 lines 27-33) in order to better heat (and thereby oxidize) an electrode. Hence, it would have been obvious at the time of the invention to one of ordinary skill in the art to combine the method of manufacturing a discharge tube as taught by Harushige/Nakamura/Sakamoto with the heating device of Kudo et al ('811) in order to better heat the electrode.

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Harushige (JP 08-236023) in view of Nakamura et al (US 6000982) and Sakamoto (US 4103416) as applied to claim 1 above, and further in view of Horiuchi et al (US 6791271).

Harushige/Nakamura/Sakamoto teach all the limitations set forth, as described above, except the heat application device is a laser device that irradiates laser light to said adhesion area of said electrode lead. Horiuchi et al ('271) teaches using a laser to heat an electrode that is adhered to a glass tube (column 15 lines 24-37) in order to increase the life of the discharge tube (column 4 lines 15-29). Hence, it would have been obvious at the time of the invention to one of ordinary skill in the art to combine the method of manufacturing a discharge tube, as taught by Harushige/Nakamura/Sakamoto, to include the teaching of heating the electrode by laser, as taught by Horiuchi et al. Motivation would be to increase the life of the discharge tube.

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Harushige (JP 08-236023) in view of Nakamura et al (US 6000982) and Sakamoto (US 4103416) as applied to claim 1 above, and further in view of Bundo et al (US 6354901).

Harushige/Nakamura/Sakamoto teach all the limitations set forth, as described above, except the heat application device is an infrared light device that irradiates infrared light to said adhesion area of said electrode lead. Bundo et al ('901) teaches a heat application device that is an infrared light device that irradiates infrared light to said adhesion area of said electrode lead (column 9 lines 16-30; column 8 line 44-63) in order form a more effectively heat the electrode. Hence, it would have been obvious at the time of the invention to one of ordinary skill in the art to combine the method of manufacturing a discharge tube, as taught by Harushige/Nakamura/Sakamoto, to include the teaching of heating the electrode by infrared radiation, as taught by Bundo et al. Motivation to combine the teachings would be to more effectively heat the electrode.

Claims 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harushige (JP 08-236023) in view of Nakamura et al (US 6000982) and Sakamoto (US 4103416) as applied to claim 1 above, and further in view of Monneraye et al (US 4163656).

Harushige/Nakamura/Sakamoto teach all the limitations set forth, as described above, except the heat application device is a heater device that applies heat to said adhesion area of said electrode lead without contacting said electrode lead and heat application device is a ring-shaped ceramic heater with a hole to insert said electrode lead. Monneraye et al ('656) teach a ring-shaped ceramic heater as a heat application device (3; figure 1a; column 2 lines 60-63; column 3 lines 5-15) that contains a hole (2) into which the electrode (1) is inserted (the electrode (1) does not touch the ceramic heater (3) as seen by figure 1a) in order to heat the electrode more quickly. The Examiner notes that although Monneraye is silent about the ceramic ring being specifically a heater, when put into the heater (column 3 lines 5-10), the ceramic ring would conduct heat from the oven onto the electrode lead (1), thus becoming a heater itself. Hence, it would have been obvious at the time of the invention to one of ordinary skill in the art to combine the method of manufacturing a discharge tube, as taught by Harushige/Nakamura/Sakamoto, to include the teaching of heating the electrode using a ceramic ring, as taught by Monneraye et al ('656). Motivation would be to heat the electrode more quickly.

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Harushige (JP 08-236023) in view of Nakamura et al (US 6000982) and Sakamoto (US 4103416) as applied to claim 1 above, and further in view of Palmer et al (US 4271345).

Harushige/Nakamura/Sakamoto teach all the limitations set forth, as described above, except the heat application device is a high frequency induction heating device that is composed of a coil section that

Art Unit: 2879

covers said adhesion area without contacting said electrode lead and a high frequency power source section that generates alternative current with high frequency to said coil section, thereby induction current is flown in said electrode lead to oxidize only the surface of said adhesion area. Palmer et al ('345) teaches a high frequency induction heating device that is composed of a coil section (32; figure 2a; column 2 lines 51-65) that covers said adhesion area without contacting said electrode lead (38) and a high frequency power source section (column 2 lines 51-60) that generates alternative current with high frequency to said coil section (abstract), thereby induction current is flown in said electrode lead to oxidize only the surface of said adhesion area, in order to better heat the electrode. Hence, it would have been obvious at the time of the invention to one of ordinary skill in the art to combine the method of manufacturing a discharge tube, as taught by Harushige/Nakamura/Sakamoto, to include the teaching of heating the electrode by a high frequency induction heating device as taught by Palmer et al ('345). Motivation would be to better heat the electrode.

Response to Arguments

Applicant's arguments filed 10/14/05 have been fully considered but they are not persuasive.

In response to applicant's argument that Sakamoto is nonanalogous art, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, Sakamoto's teaching of the method of producing an electrode for an electrical terminal device, as shown in figure 3, is quite relevant to the particular problem of providing an electrode

Art Unit: 2879

with only a surface of a predetermined area oxidized, since Sakamoto teaches this method may be used for electrodes for gas discharge lamps (column 6 lines 21-30).

In regard to applicant's argument that Sakamoto fails to teach an electrode with only a surface of a predetermined adhesion area oxidized, the Examiner respectfully disagrees. In the abstract, Sakamoto teaches, "a portion intermediate the free ends is provided with a layer of chromium oxide to improve the seal between the lead wire and the fused glass bead". This process is discussed further in column 5 line 10 to line 24 and shown in figure 3. The oxidized layers that are removed in a reducing atmosphere are the oxidized layers on the exposed surfaces of the support cup (16) and on the exposed lead wire *after* the wires are sealed in through holes of the support cup (16) via glass beads (30; see the abstract). Therefore, the oxidized adhesive area (28) of the electrode is not exposed to the reducing atmosphere. Sakamoto specifically says, "after the sealing step, the assembly is removed from the sintering oven, cooled and finally, the terminal device is dipped in a weak acid solution whose acidity is such that it will eliminate the oxide film layer on the socket 10 **and from the portions of the leads projecting from the glass seal** 30" in column 5 lines 43-50. Therefore, Sakamoto does teach an electrode with only a surface of a predetermined adhesion area oxidized.

In regard to applicant's argument that Sakamoto teaches a different method of manufacturing the electrode with only a surface of a predetermined adhesion area oxidized, it is noted that the features upon which applicant relies (i.e., the elimination of the need for a resist material) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

In regard to applicant's argument that Kudo is not related to the oxidation of an electrode, the Examiner respectfully disagrees. Kudo teaches a heat application device comprising a pair of electrode members (4; figure 1; column 1 lines 25-40) and a power source (figure 4) that applies a predetermined voltage (figure 4) between said pair of electrode members to heat said adhesion area (column 7 lines 27-33); a portion of said electrode member (4) to contact a electrode lead (1) is made of a conductive material (column 1 lines 25-39). Therefore, Kudo's heat application device is used to transport oxidized metal onto the needle electrode (1; column 1 lines 35-40).

In regard to applicant's argument that Kudo fails to teach a pair of electrodes, the Examiner respectfully disagrees. Kudo teaches a pair of electrode members (4; figure 1; column 1 lines 25-40) but calls them "heaters". However, heaters may be considered a type of conductor¹. Therefore Kudo teaches a pair of electrode members.

In regard to applicant's argument that Kudo fails to teach a degree of heating said area is adjusted by changing the voltage, the electric current, the energizing period of said power source, or a combination thereof, the Examiner respectfully disagrees. Kudo teaches in column 7 lines 27-55 that the voltage was changed during the process in order to produce the gallium ion source. Therefore, Kudo teaches all the limitations set forth in the claim.

In response to applicant's argument that the laser as taught by Horiuchi fails to be used as a heater for the purpose of oxidizing, a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the

¹ http://www.askoxford.com/concise_oed/electrode?view=uk

Art Unit: 2879

claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim.

In response to applicant's argument that the laser as taught by Horiuchi fails to be used as a heater for the purpose of oxidizing, a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim.

In response to applicant's argument that Monneraye et al fails to teach a ring shaped heater, the Examiner respectfully disagrees. Monneraye et al teaches a ring-shaped ceramic part that is part of the whole heating element (the ring and the oven into which is placed). It is common knowledge that ceramics are excellent heat conductors², and Monneraye et al teach that the ceramic ring is placed in the oven (column 3 lines 5-8), therefore the ceramic ring would naturally transfer the heat to the electric lead. Therefore, Monneraye et al teach a ceramic ring-shaped heater.

In response to applicant's argument that Palmer et al is nonanalogous art, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, Palmer et al teach a heating method of a "pin" that is conductive (column 2 lines 16-60). Therefore one may use this method on an electrode, which is also a type of "pin" that is conductive. Therefore the art of Palmer et al is analogous art.

² http://en.wikipedia.org/wiki/Ceramic#Properties_of_ceramics

In response to applicant's argument that Palmer et al heating process would not oxidize the electrode, the Examiner respectfully disagrees. The oxidation process that takes place in Sakamoto ('416) is triggered by heating the electrode within a hydrogen atmosphere (column 5 lines 10-15). Palmer et al describes a different method of heating, as recited in claim 9 of the outstanding application. Therefore, combining a different heating method would not change the oxidation process in Sakamoto ('416).

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Elizabeth A. Rielley whose telephone number is 571-272-2117. The examiner can normally be reached on Monday - Friday 7:30 - 4:00.

Art Unit: 2879

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimeshkumar Patel can be reached on 571-272-2457. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Elizabeth Rielley

Examiner
Art Unit 2879

msz 12/20/05
MARICELI SANTIAGO
PRIMARY EXAMINER